



DOE-EM/GJ956-2005

## 299-W11-80 (A7322) Log Data Report

### Borehole Information:

<b>Borehole:</b> 299-W11-80 (A7322)		<b>Site:</b> 216-T-16 Trench			
<b>Coordinates (WA St Plane)</b>		<b>GWL<sup>1</sup> (ft) :</b> None		<b>GWL Date:</b> 08/09/05	
<b>North (m)</b>	<b>East (m)</b>	<b>Drill Date</b>	<b>Ground Level Elevation (ft)</b>	<b>Total Depth (ft)</b>	<b>Type</b>
136873.284	566996.371	10/82	704.02	54	Cable

### Casing Information:

<b>Casing Type</b>	<b>Stickup (ft)</b>	<b>Outer Diameter (in.)</b>	<b>Inside Diameter (in.)</b>	<b>Thickness (in.)</b>	<b>Top (ft)</b>	<b>Bottom (ft)</b>
Welded Steel	3.7	8 5/8	8	5/16	3.7	54

### Borehole Notes:

Casing diameter and casing stickup measurements were acquired by the logging engineer using a caliper and steel tape. Measurements were rounded to the nearest 1/16 in. The driller reported grout was emplaced around the casing from 0 to 20 ft and at the bottom of the borehole from 48 to 52 ft (depth reference is unknown).

### Logging Equipment Information:

<b>Logging System:</b> Gamma 1E		<b>Type:</b> SGLS (70%) SN: 34TP40587A
<b>Effective Calibration Date:</b> 03/04/05	<b>Calibration Reference:</b> DOE/EM-GJ854-2005	
<b>Logging Procedure:</b> MAC-HGLP 1.6.5, Rev. 0		

### Spectral Gamma Logging System (SGLS) Log Run Information:

<b>Log Run</b>	<b>1</b>	<b>2 Repeat</b>			
Date	08/09/05	08/09/05			
Logging Engineer	Pearson	Pearson			
Start Depth (ft)	52.0	4.0			
Finish Depth (ft)	4.0	9.0			
Count Time (sec)	100	100			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	1.0			
ft/min		N/A			
Pre-Verification	AE091CAB	AE091CAB			
Start File	AE091000	AE091049			
Finish File	AE091048	AE091054			
Post-Verification	AE091CAA	AE091CAA			

<b>Log Run</b>	<b>1</b>	<b>2 Repeat</b>			
Depth Return Error (in.)	N/A	N/A			
Comments	No fine gain adjustment.	No fine gain adjustment.			

### **Logging Operation Notes:**

Logging was conducted with a centralizer on the sonde. Logging data acquisition is referenced to the top of casing. A repeat section was collected in this borehole to evaluate system performance.

### **Analysis Notes:**

<b>Analyst:</b>	Henwood	<b>Date:</b>	08/22/05	<b>Reference:</b>	GJO-HGLP 1.6.3, Rev. 0
-----------------	---------	--------------	----------	-------------------	------------------------

Pre-run and post-run verifications for the logging system were performed before and after the day's data acquisition. The acceptance criteria were met.

A casing correction for 0.3125-in.-thick casing was applied to the log data.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with an EXCEL worksheet template identified as G1EMar05.xls using efficiency functions and corrections for casing, water, and dead time as determined from annual calibrations. No corrections for dead time or water were necessary.

### **Log Plot Notes:**

Separate log plots are provided for the man-made radionuclide ( $^{137}\text{Cs}$ ) detected in the borehole, naturally occurring radionuclides ( $^{40}\text{K}$ ,  $^{238}\text{U}$ ,  $^{232}\text{Th}$  [KUT]), a combination of man-made, KUT, and dead time, and total gamma plotted with dead time. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, casing corrections, or water corrections.

### **Results and Interpretations:**

$^{137}\text{Cs}$  is the man-made radionuclide detected in this borehole.  $^{137}\text{Cs}$  was detected between the ground surface and 12 ft; the maximum concentration was measured at approximately 1 pCi/g at 10 ft.

The repeat section generally indicates good agreement of the naturally occurring KUT and  $^{137}\text{Cs}$  concentrations.

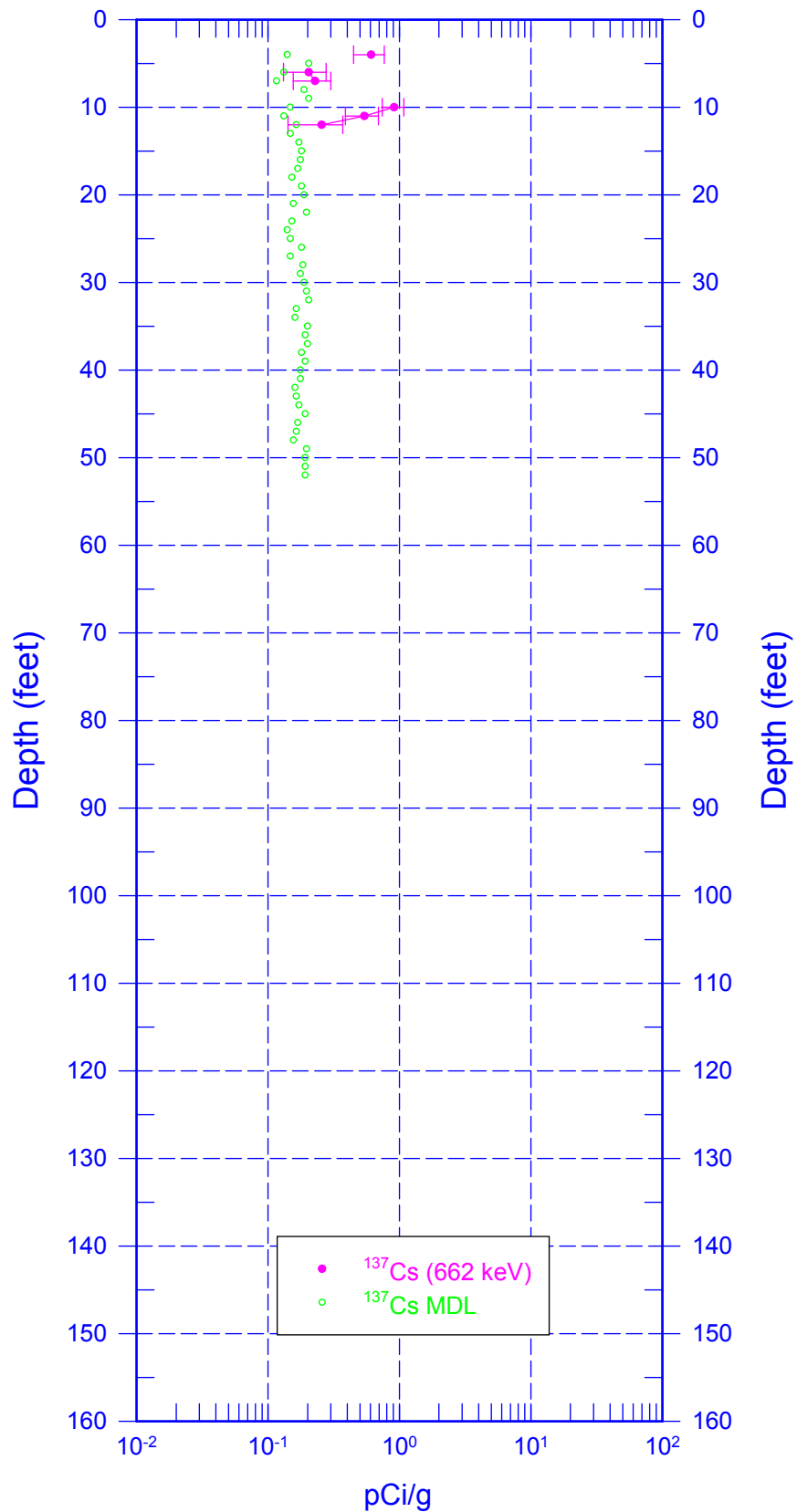
---

<sup>1</sup> GWL – groundwater level

<sup>2</sup> N/A – not applicable

# 299-W11-80 (A7322)

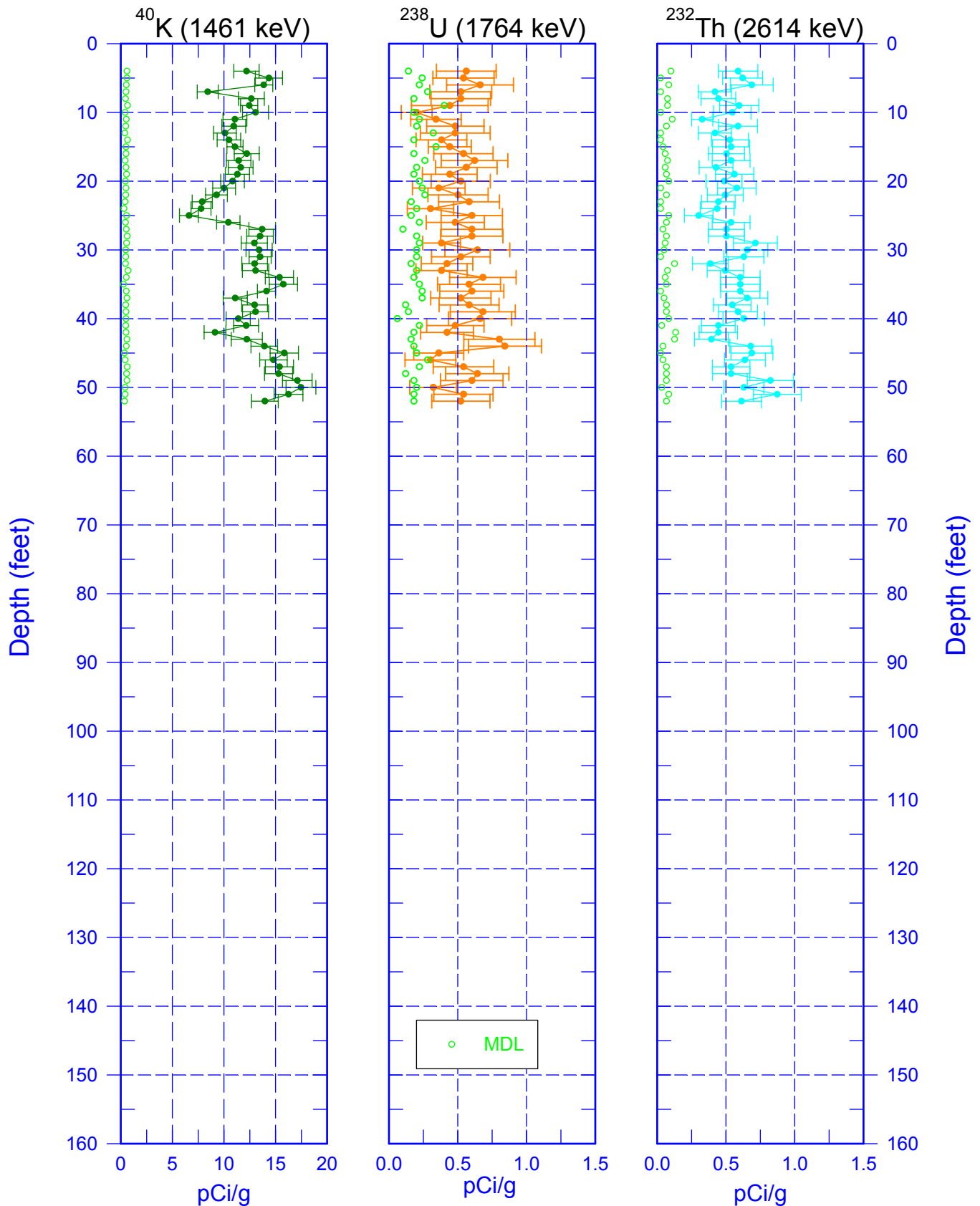
## Man-Made Radionuclides



Zero Reference - Top of Casing

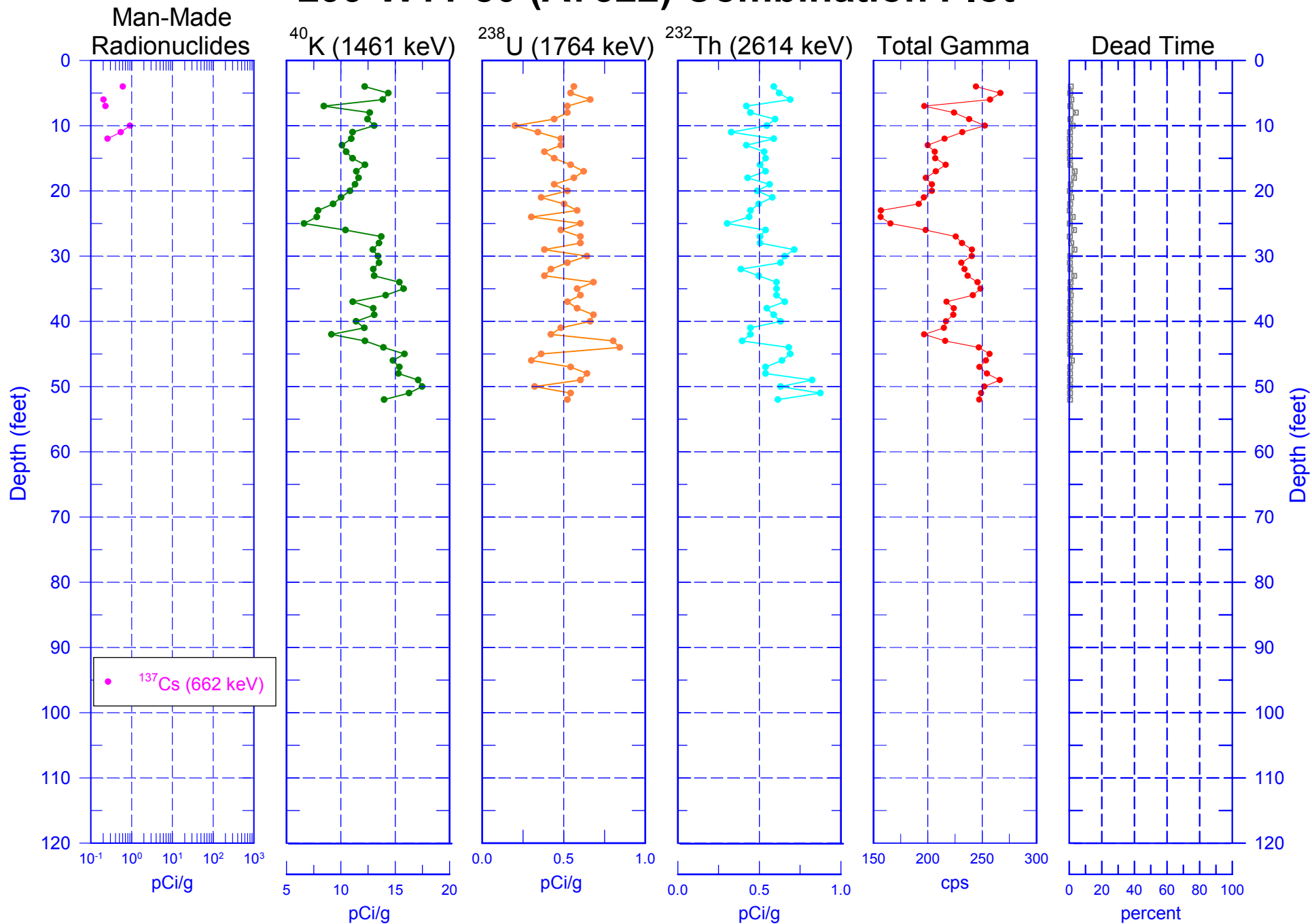
# 299-W11-80 (A7322)

## Natural Gamma Logs



Zero Reference = Top of Casing

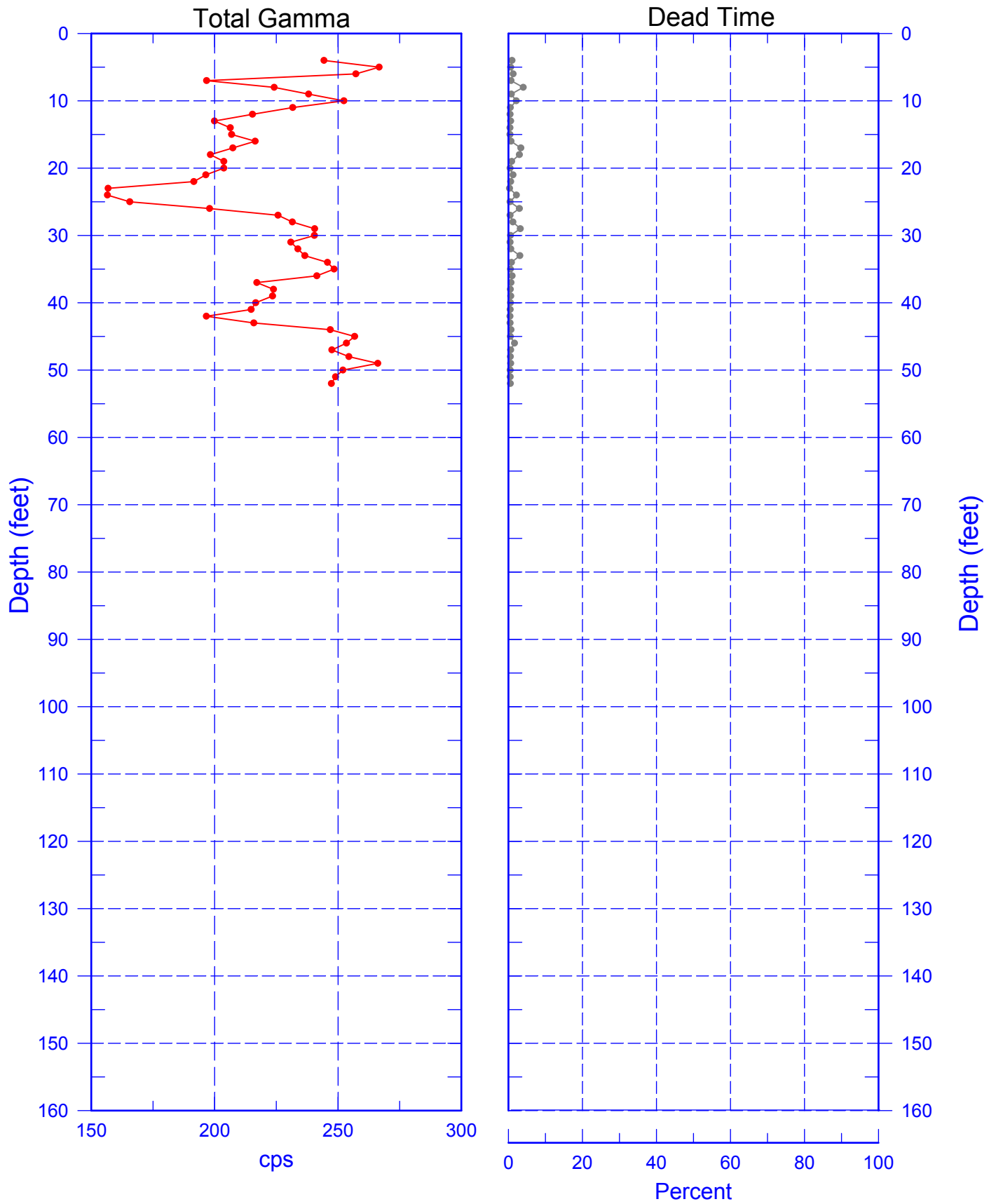
# 299-W11-80 (A7322) Combination Plot



Zero Reference - Top of Casing

# 299-W11-80 (A7322)

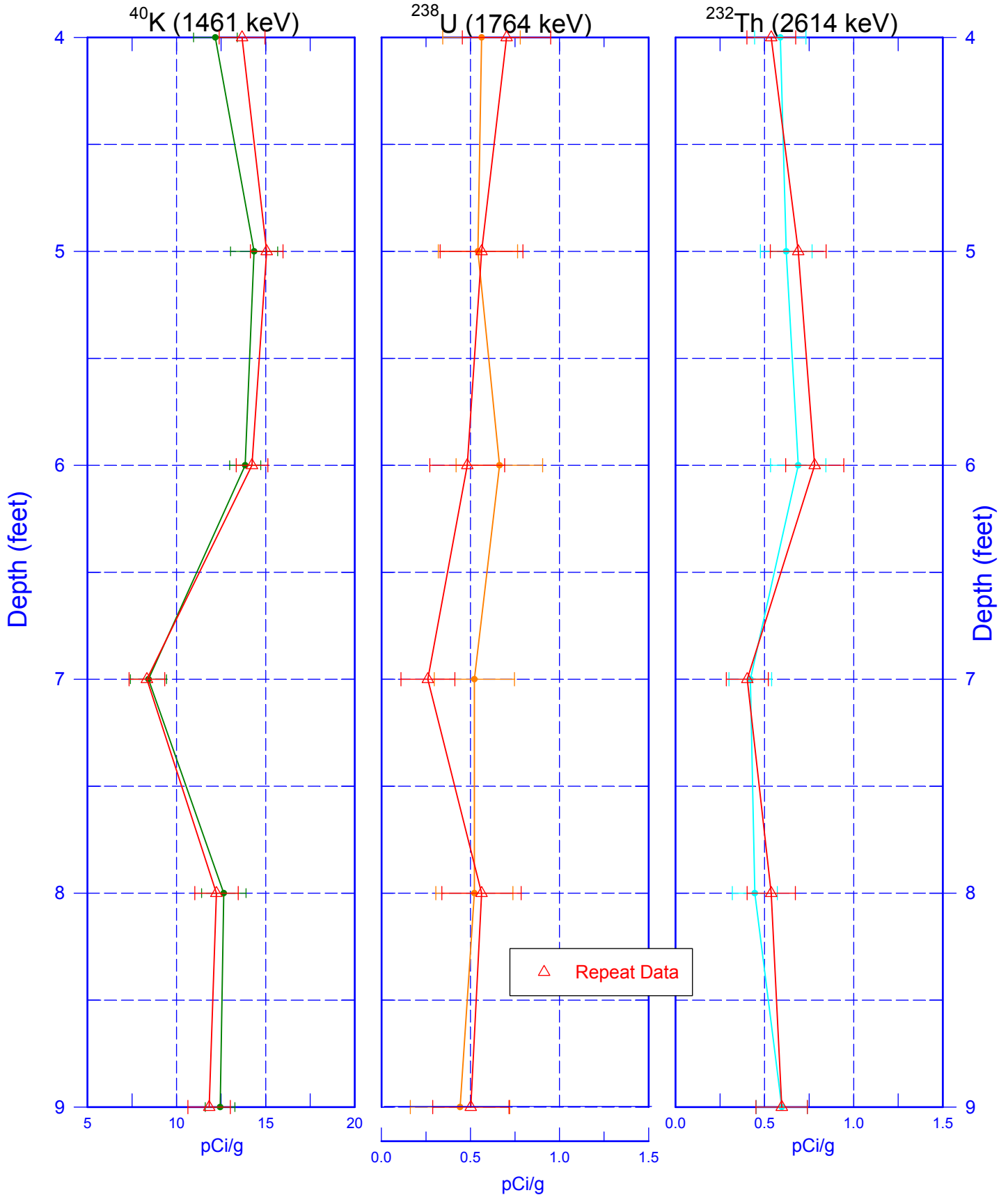
## Total Gamma & Dead Time



Reference - Top of Casing

# 299-W11-80 (A7322)

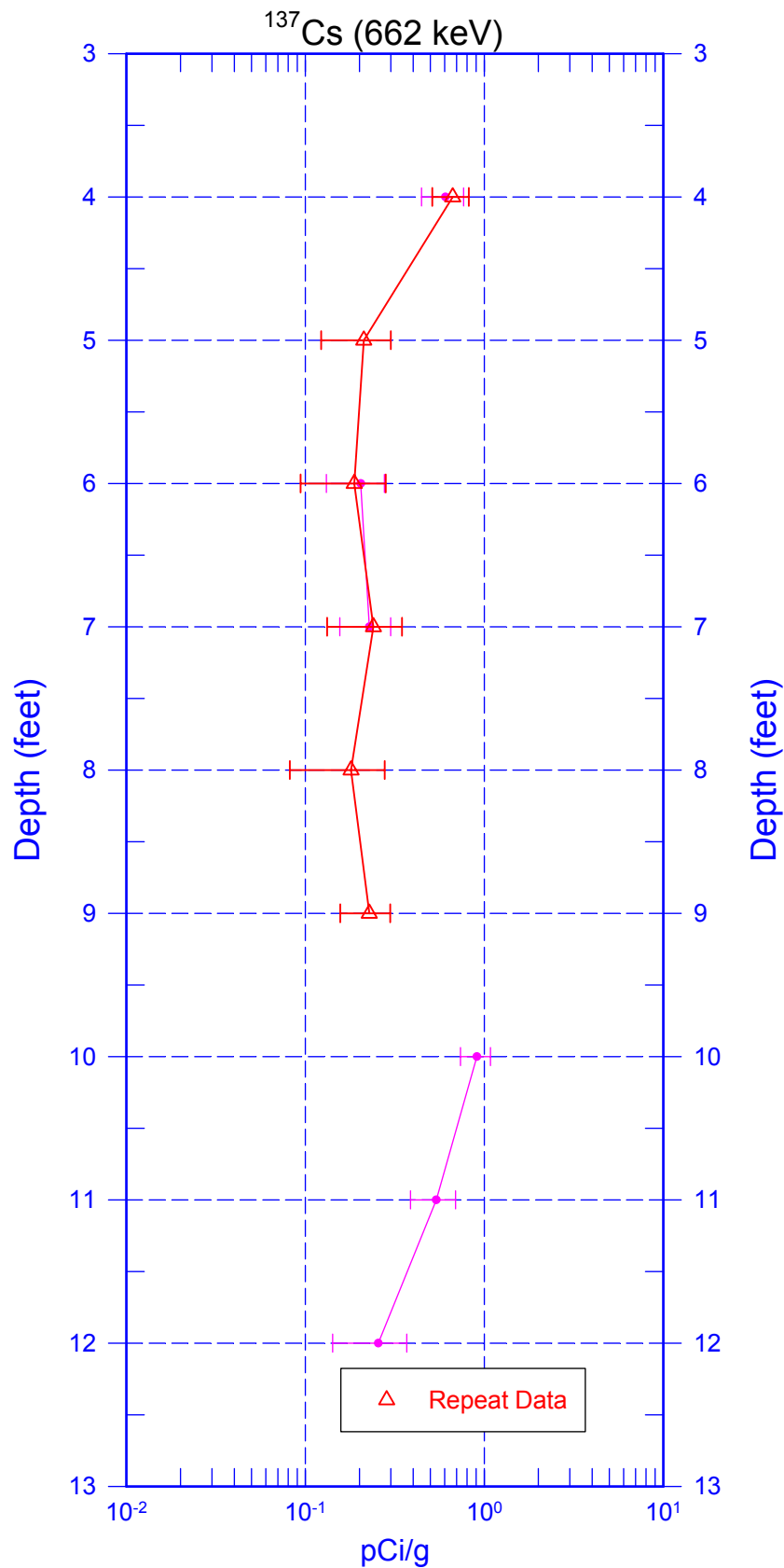
## Repeat Section of Natural Gamma Logs



Zero Reference - Top of Casing

# 299-W11-80 (A7322)

## Repeat of Man-Made Radionuclides



Zero Reference - Top of Casing